3965

Diag. Ch. No.

Form 537

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

State: Florida

DESCRIPTIVE REPORT.

Hydr. Sheet No. 3965

LOCALITY:

East Coast.

St. Johns River to

St. Augustine

Inlet

1917

CHIEF OF PARTY:

H. J. Rusk.

3965

H. & G. ENGINEER IN CHARGE (S)

DEPARTMENT OF COMMERCE

U. S. COAST & GEODETIC SURVEY

E. LESTER JONES, SUPERINTENDENT.

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DESCRIPTIVE REPORT

to accompany

OFFSHORE DEAD RECKONING HYDROGRAPHIC

SHEET ("B") 3965

EAST COAST OF FLORIDA

St. John's River L. H. to St. Augustine L. H.

March 7, 1917 to April 27, 1917.

----------oOo----------

U S C & G S Steamer ISIS,

GILBERT T. RUDE,

Commanding.

D E S C R I P T I V E R E P O R T

to accompany

OFFSHORE DEAD RECKONING HYDROGRAPHIC SHEET ("B") 3965

EAST COAST OF FLORIDA
St. John's River L. H. to St. Augustine L. H.

February 1, 1917 to April 30, 1917

U S C & G S Steamer ISIS

GILBERT T. RUDE,
Commanding.

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Instructions:

Instructions for this work were issued to the Commanding Officer on December 28, 1916.

Area:

The area of hydrography covered on this sheet is included between parallels 29° 48' N and 30° 20' N and extends from about Long. 80° 47' W to the 100-fathom curve. The area embraced is about 1675 square miles.

This sheet connects on the north with Hydrography made by the Steamer BACHE.

Signals

A line of buoys, the type of which is explained in my season report dated May 20, 1917, were planted by the Light House Tender CYPRESS and located by sextant cuts from the "ISIS" anchored inshore, her position being fixed by angles on the tall signals built along the coast by Signalman J. S. Bilby. A list of these signals are given in my Season Report.

The angles for the location of these buoys are recorded in an Angle Record volume which is forwarded herewith under separate cover. The positions of these buoys were plotted on the inshore sheet and transferred to this sheet by D.M. and D.Ps, scaled from that sheet.

Class of Work:

No fixed position work was done on this sheet. The entire work consists of precise dead reckoning in accordance with the general scheme used for this kind of work during the immediate preceding field seasons together with such additional aids to precision as were developed during the past field season, which are fully described in my Season's Report of May 20, 1917.

Currents:

The vessel was anchored for current observations, after each two hour run, inside the 25-fathom curve, and at the forty and 100-fathom curves, out bound, with the exception of the 1st line where no observation was made at the 100-fathom curve.

Tide Guage:

The record of the Automatic Tide Guage at St. Augustine, Florida, was used to reduce the soundings for the entire area.

Scale:

The scale of the projection is one to one hundred and eighty thousand.

Plane of Reference:

The plane of reference, to which all soundings are reduced, is mean low water. All soundings are expressed in feet.

Spacing of Lines:

The lines are spaced about four miles apart except at the 100-fathom curve. Here it was thought advisable to run the line to a point on account of the strength of the Gulf Stream usually encountered here. In this way the 100-fathom soundings are spaced about eight miles apart, the distance between separate lines decreasing to about the four miles near the edge of the continental shelf or in depths of approximately 27 fathoms.

Spacing of Soundings:

Sounding was done with trolley apparatus from the inshore edge of the

sheet to depths of about 25 or 26 fathoms, using a 25lb. lead for most of the soundings up to 21 fathoms and a 40lb. lead for the greater depths. From the anchorage at or near 25 fathoms to the 100-fathom curve and return, stranded sounding wire with registering dial and 40lb. lead was used, and the engines reversed until all headway was off the vessel, so that vertical casts were obtained.

When using the dial and stopping the ship, the soundings were spaced from 5 to 6 tenths of a mile apart. When using the trolley apparatus, they were spaced about three to the mile.

Ship Swings for Deviation:

The ISIS was swung for deviation of the steering compass immediately before commencing actual hydrography, immediately at the close of the seasons work and once about three fifths of the elapsed time between the first and last swings: namely on February 7th, March 30th, and April 26th, 1917.

The swings were made under good observing conditions.

Log Tests:

Log No. 204 was used for recording the distance run thruout the season. The instrument was rated over a course of known length at four different times during the season for full speed running and twice for the two speeds "D" and "B" used only on the precise dead reckoning to the 100-fathom curve.

Method:

Departure was made from one of the offshore buoys and a full speed run made to the edge of the area covered by the inshore sheet where the second current observation was then obtained. From this position the sounding line started using speed "D" (Full speed for approximately 1½ minutes, then drifting with engines stopped until up and down soundings could be obtained with the trolley apparatus,) and continued at this speed with current an-

chorages after each two hour run until near the edge of the continental shelf and depths of 25 or 26 fathoms, the line then continued using speed "B" (Full speed for approximately ½ mile then reversing engines to full stop,) to the 100-fathom curve. The line then returned to buoy connection in the same manner, the order of the different speeds being, of course, reversed.

Astronomical observations were made at favorable opertunities in and near the Gulf Stream and the results, in most instances, checked closely with the adjusted positions, but no weight was given them in either running or plotting the lines since the degree of precision with which the position of the vessel is known at any position on lines of this length, by means of log distances and the measured velocity and direction of wind and current, is deemed to exceed that given by astronomical sights.

Bottom specimens were obtained at regular intervals, bottled, labeled and forwarded as a part of the records of this sheet. Most of these specimens were obtained by arming the lead with soap as the bottom was in general too hard to permit the obtaining of good samples with the Stellwagen Cup.

The velocity of the wind was measured at each anchorage by means of the anemometer and the correction applied normal to the direction of the true course steered. The amount of correction for leeway was found to be very nearly .15 miles for each 10 miles of velocity of that component of the winds force normal to the true course steered. Consequently this amount was used in the final plotting of all lines.

Surface, air, and bottom temperatures were also obtained at regular intervals and recorded in the sounding records. Hourly barometer readings are recorded in the Ship's Log.

(n b) The reasons for the full speed run to the edge of the inshore sheet before starting sounding are as follows:

To avoid overlaping of the work on sheets "A" and "B", to secure a more uniform and workman-like spacing of lines, and to secure greater precision in the 100-fathom lines by making the elapsed between buoy connections as short as possible.

Plotting:

The anchorages and adjustments on the fair sheet were plotted by F. L. Peacock, Assistant, the intermediate positions and soundings were plotted by C. K. Green, Deck Officer.

Line No. 1 was plotted as follows:

Anchorages Nos. 1, to 5 inclusive were plotted with the resultant of the mean currents and leeway observed at their respective anchorages and the one preceding. Position 30B, near edge of continental shelf plotted with current and wind velocity observed at anchorage No. 5. Anchorage No. 6, near forty fathom curve, plotted with the resultant of currents and wind velocity measured at anchorages Nos. 5 and 6. Position 49B plotted with current and wind velocity observed at anchorage No. 6. (On this line, no current observation was made at the 100-fathom curve. It was estimated that the ship was affected by the 3 knot current in a N.N.E'ly direction measured at anchorage No. 6 from that position to position 49B.) Anchorage No. 7, was plotted with resultant of currents and wind velocity observed at anchorages Nos. 6 and 7. Remainder of anchorages plotted by same method as Nos. 1-5. The closure was then adjusted thruout the line proportional to elapsed time while underway since leaving buoy.

Line No. 2.

Anchorages Nos. 1 to 6 inclusive were plotted with the resultant of the mean current and wind observed at their respective anchorages and the one preceding. Position No. 33D, plotted with the resultant of the currents and wind observed at anchorages Nos. 5 and 6. Anchorage No. 7, plotted with

the resultant of currents and winds observed at anchorages Nos. 5 and 7. Remaining anchorages plotted in same manner as Nos. 1 to 6. Closure adjusted same as Line No. 1.

Line No. 3.

Same as Line No. 2

Line No. 4

Zero currents were observed at both the 40 and 100-fathom anchorages. The plotting of the line is the same as for Nos. 2 and 3.

Line No. 5. (Split)

Plotted in same manner as inshore portions of previous lines.

(n b) The absence of Gulf Stream Current at the 40 and 100-fathom anchorages on Line No. 4 would appear to be due from some phenomenon of the strong spring tides running at that time.

Results:

No abrupt inequalities of bottom were observed.

The average closure of the lines on this sheet was about 1.7 naut. mi. per line.

TABLE OF STATISTICS

Date	Letter Day	Positions	Soundings	Statute Miles
March 7	A	11	75	23.6
" 8	B	78	246	78.3
" 14	C	11	44	32.6
" 15	D	61	136	81.3
" 16	E	2	0	1.8
April 23	F	13	44	31.6
" 24	G	63	140	75.5
" 25	H	11	39	29.9
" 26	J	55	122	68.1
" 27	K	19	55	72.0
Totals		324	901	494.7

Respectfully Submitted,

Gilbert J. Rude.

Assistant, C.&.G.S.
Chief of Party.

ADDRESS
U. S. COAST AND GEODETIC SURVEY
WASHINGTON, D. C.

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REFER TO No. 5-VEC

Place with descriptive report of hydrographic sheet No.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

Drawing Section.

October 12, 1917.

Division of Hydrography and Topography:

Division of Charts:

Tidal reductions are approved in
2 volumes of Sounding records for

HYDROGRAPHIC SHEET 3965

East Coast of Florida
G. T. Rude in 1917.

Plane of reference is
Mean low water, reading

3.6 ft. on tide staff at St. Augustine*

*Allowance made for difference in the tide at place of sounding.

L. P. Shidy
Acting Chief, Section of
Tides and Currents.

Hydrographic Sheet 3965.

Positions and edge plotted by Field Party, Verified & inked by S. L. Rosenberg.

This survey was run entirely by dead reckoning and all the plotting was carefully verified. Starting from a sextant angle fix or a departure from a buoy, the compass course, corrected for variation and deviation, was plotted; the corrected log distance laid off and the corrections for wind and current applied. This method was repeated at every position at which stops were made for current observations, to the end of the line and back again until a fixed point was reached, when the closure was made and the error distributed ~~among~~ at the different current observation stations in proportion to the time intervals.

All the information necessary to plot the dead reckoning work was entered in a separate volume and was found to be practically indispensable in plotting work of this character. A standard blank form should be designed and printed for the use of parties doing similar work.

No allowance for either wind or current had been made on the old off shore work, therefore an effort to compare this work with the old would have been useless and was not even attempted.

Samuel L. Rosenberg,
March 4, 1918.